Claims

1. A process for partitioning of proteins or cells in aqueous two-phase systems (ATPS), comprising the steps of

a) in order to obtain a fusion protein or cell, combining a protein or a cell of interest to a targeting protein selected from the group consisting of amphipathic and hydrophobic proteins having the ability to partition in ATPS and to carry said protein or cell of interest into one of the phases, and

b) subjecting said fusion protein or cell carrying the targeting protein to an ATPS separation.

2. The process according to claim 1, wherein the targeting protein is a hydrophobin or hydrophobin-like protein or a part thereof.

3. The process according to claim 2, wherein the hydrophobin is a *Trichoderma* hydrophobin or a part thereof.

4. The process according to claim 3, wherein the *Trichoderma* hydrophobin is HFBI, HFBII or SRHI ,or a part thereof.

5. The process according to claim 1, wherein the amphipathic or hydrophobic proteins or parts thereof form aggregates.

6. The process according to any one of claims 1 to 5 for partitioning cells in ATPS, wherein in step a) of claim 1 the combination of the cells of interest to the targeting protein comprise bringing said targeting protein onto the surface of said cells.

7. The process according to claim 6, wherein the cells are yeast cells.

8. The process according to claim 6 wherein the cells are spores.

9. The process according to any one of claims 6 to 8, wherein the targeting protein is fused to a protein which brings the targeting protein onto the surface of the cell.

10. A fusion protein, comprising a hydrophobin or hydrophobin-like protein as defined in any one of claims 2 to 5 fused to a protein of interest.

11. The fusion protein according to claim 10, wherein the protein of interest is a cell-bound protein or a part thereof.

12. The fusion protein according to claim 10, wherein the protein of interest is an extracellular protein or a part thereof.

13. The fusion protein according to claim 12, wherein the extracellular protein is an extracellular protein of *Trichoderma*, selected from the group consisting of cellulases, hemicellulases and proteases.

14. The fusion protein according to claim 10, wherein the protein of interest is an antibody protein or a part thereof.

15. The process according to claim 1, wherein the targeting protein is fused to the protein of interest according to any one of the claims 10 to 14.

16. A recombinant organism producing a fusion protein according to any one of claims 10 to14.

17. The recombinant organism according to claim 16, wherein the organism has been genetically modified to be capable of producing a fusion protein according to any one of claims 10 to 14.

18. A recombinant DNA molecule, comprising a DNA molecule encoding a fusion protein according to any one of claims 10 to 14.

19. A process for producing a fusion protein according to any one of the claims 10 to 14 with recombinant organisms, comprising the steps of
a) transforming the organism with DNA molecules enabling expression of such proteins, and

b) recovering such protein from the culture of the recombinant organism.

20. The process according to any one of claims 1 to 9 and 15, wherein the aqueous two-phase system is selected from the group consisting of PEG/salt, PEG/Dextran and PEG/starch systems or derivatives thereof, detergent-based aqueous two-phase systems and thermoseparating polymer systems.

21. The process according to claim 20, wherein the detergent-based ATPS comprises a detergent which is selected from the group consisting of nonionic and zwitterionic detergents.

22. The process according to claim 20, wherein the thermoseparating polymer system comprises a polymer whicb is selected from the group consisting of polyethylene-polypropylene copolymers.

23. The process according to any one of claims 1-9 and 15, wherein the protein or cell of interest is separated from a suspension containing cells or cell extracts.

24. A process for separating hydrophobins or hydrophobin-like proteins or parts thereof in aqueous two-phase systems, comprising the steps of

a) mixing solutions containing said hydrophobin, hydrophobin-like protein or parts thereof with the phase forming chemicals, and

b) carrying out ATPS separation,

wherein the aqueous two-phase system is as defined in any one of claims 20 to 22.